

**IN THE CLAIMS:**

1. (Previously Presented) A medical instrument holding apparatus comprising:  
a supporting mechanism which has a distal end portion adapted to support a medical instrument about a first axis and a holding portion adapted for being held by the operator;

a moving mechanism which has at least first and second sides and which supports the supporting mechanism;

a shaft portion operatively connected to the first side along a longitudinal length of the first side such that the medical instrument and the supporting mechanism can be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism to the supporting mechanism via the second side, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism from below the supporting mechanism in the direction of gravity to be pivotable with respect to the moving mechanism and rotatable with respect to the holding portion about a second axis where the first and second axes are substantially parallel; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the

weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment.

2. (Previously Presented) A medical instrument holding apparatus according to claim 1, wherein the moving mechanism and the supporting mechanism have braking mechanisms capable of being switched between a restrictive state in which the moving and supporting mechanisms are prevented from moving and a permissive state in which the mechanisms are allowed to move, and the supporting mechanism has a switch disposed on the holding portion which is operated by an operator and switches the braking mechanisms to switch the moving and supporting mechanisms between the restrictive state and the permissive state.

3. (Previously Presented) A medical instrument holding apparatus according to claim 2, further comprising the medical instrument, wherein the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions on the holding portion; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the combined center of gravity of the holding portion and the medical instrument; and

the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism, wherein the combined center of gravity is located on a longitudinal axis of the supporting mechanism between the ball joint and the distal end portion of the supporting mechanism.

4. (Previously Presented) A medical instrument holding apparatus according to claim 3, wherein the moving mechanism has a parallelogrammatic link mechanism, the link

mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm.

5. (Original) A medical instrument holding apparatus according to claim 4, wherein the first arm is shorter than the fourth and second arms.

6. (Original) A medical instrument holding apparatus according to claim 5, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

7. (Previously Presented) A medical instrument holding apparatus comprising:

- a medical instrument;
- a supporting mechanism which has a distal end portion supporting the medical instrument and a holding portion being held by the operator;
- a moving mechanism which has first and second sides and which supports the supporting mechanism;
- a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the moving mechanism and the supporting mechanism have braking mechanisms capable of being switched between a restrictive state in which the moving and supporting mechanisms are prevented from moving and a permissive state in which the mechanisms are allowed to move, and the supporting mechanism has a switch which is operated by an operator and switches the braking mechanisms to switch the moving and supporting mechanisms between the restrictive state and the permissive state;

the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions on the holding portion; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a

position different from the combined center of gravity of the holding portion and the medical instrument and the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm;

the first arm is shorter than the fourth and second arms;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the

center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

8. (Original) A medical instrument holding apparatus according to claim 4, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

9. (Previously Presented) A medical instrument holding apparatus comprising:  
a medical instrument;

a supporting mechanism which has a distal end portion supporting the medical instrument and a holding portion being held by the operator;

a moving mechanism which has first and second sides and which supports the supporting mechanism;

a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the

weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the moving mechanism and the supporting mechanism have braking mechanisms capable of being switched between a restrictive state in which the moving and supporting mechanisms are prevented from moving and a permissive state in which the mechanisms are allowed to move, and the supporting mechanism has a switch which is operated by an operator and switches the braking mechanisms to switch the moving and supporting mechanisms between the restrictive state and the permissive state;

the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions on the holding portion; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the combined center of gravity of the holding portion and the medical instrument and the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm

end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

10. (Previously Presented) A medical instrument holding apparatus according to claim 2, wherein the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm being supported on the supporting mechanism; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm



end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight on the eighth arm end thereof.

11. (Original) A medical instrument holding apparatus according to claim 10, wherein the first arm is shorter than the fourth and second arms.

12. (Original) A medical instrument holding apparatus according to claim 11, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

13. (Previously Presented) A medical instrument holding apparatus comprising:

a supporting mechanism which has a distal end portion supporting a medical instrument and a holding portion being held by the operator;

a moving mechanism which has first and second sides and which supports the supporting mechanism;

a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion

on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the moving mechanism and the supporting mechanism have braking mechanisms capable of being switched between a restrictive state in which the moving and supporting mechanisms are prevented from moving and a permissive state in which the mechanisms are allowed to move, and the supporting mechanism has a switch which is operated by an operator and switches the braking mechanisms to switch the moving and supporting mechanisms between the restrictive state and the permissive state;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm being supported on the supporting mechanism; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being

connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight on the eighth arm end thereof;

the first arm is shorter than the fourth and second arms;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

14. (Original) A medical instrument holding apparatus according to claim 10, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

15. (Previously Presented) A medical instrument holding apparatus comprising:

a supporting mechanism which has a distal end portion supporting a medical instrument and a holding portion being held by the operator;

a moving mechanism which has first and second sides and which supports the supporting mechanism;

a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the moving mechanism and the supporting mechanism have braking mechanisms capable of being switched between a restrictive state in which the moving and supporting mechanisms are prevented from moving and a permissive state in which the mechanisms are allowed to move, and the supporting mechanism has a switch which is operated by an operator and switches the braking mechanisms to switch the moving and supporting mechanisms between the restrictive state and the permissive state;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm being

supported on the supporting mechanism; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight on the eighth arm end thereof;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

16. (Previously Presented) A medical instrument holding apparatus according to claim 1, further comprising the medical instrument, wherein the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions; a center of inclination of

the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the center of gravity of a heavy structure including the holding portion and the medical instrument; and

the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism and the second end supporting the ball joint.

17. (Previously Presented) A medical instrument holding apparatus according to claim 16, wherein the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm.

18. (Original) A medical instrument holding apparatus according to claim 17, wherein the first arm is shorter than the fourth and second arms.

19. (Original) A medical instrument holding apparatus according to claim 18, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

20. (Previously Presented) A medical instrument holding apparatus comprising:

- a medical instrument;
- a supporting mechanism which has a distal end portion supporting the medical instrument and a holding portion being held by the operator;
- a moving mechanism which has first and second sides and which supports the supporting mechanism;
- a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;
- a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;
- a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and
- a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the center of gravity of a heavy structure including the holding portion and the medical instrument and the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism and the second end supporting the ball joint;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm;

the first arm is shorter than the fourth and second arms;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and



the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

21. (Original) A medical instrument holding apparatus according to claim 17, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

22. (Previously Presented) A medical instrument holding apparatus comprising:

a medical instrument;

a supporting mechanism which has a distal end portion supporting the medical instrument and a holding portion being held by the operator;

a moving mechanism which has first and second sides and which supports the supporting mechanism;

a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the holding portion is located so that a combined center of gravity of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the center of gravity of a heavy structure including the holding portion and the medical instrument and the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism and the second end supporting the ball joint;

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being connected to the support arm; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to

support the moving mechanism for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the fifth arm end of the third arm so as to be parallel to the first arm, the counterweight being located on the eighth arm end of the fourth arm;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

23. (Previously Presented) A medical instrument holding apparatus according to claim 1, wherein the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm being supported on the supporting mechanism; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion, and coupled to the basal portion by means

of the shaft portion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight on the eighth arm end thereof.

24. (Original) A medical instrument holding apparatus according to claim 23, wherein the first arm is shorter than the fourth and second arms.

25. (Original) A medical instrument holding apparatus according to claim 24, wherein the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm.

26. (Previously Presented) A medical instrument holding apparatus comprising:

a supporting mechanism which has a distal end portion supporting a medical instrument and a holding portion being held by the operator;

a moving mechanism which has first and second sides and which supports the supporting mechanism;

a shaft portion located between the first and second sides and allowing the medical instrument and the supporting mechanism to be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion on the supporting mechanism toward the moving mechanism, the ball joint further supporting the supporting mechanism to be pivotable with respect to the moving mechanism; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment;

wherein:

the moving mechanism has a parallelogrammatic link mechanism, the link mechanism including: a first arm having first and second arm ends, the first arm end being supported on the supporting mechanism; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the moving mechanism for rotating motion, and coupled to the basal portion by means of the shaft portion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight on the eighth arm end thereof;

the first arm is shorter than the fourth and second arms;

the counterweight has an adjusting mechanism which adjusts the position of the center of gravity of the counterweight along the axis of the fourth arm; and

the ball joint includes a detecting mechanism which detects the angle of inclination of the holding portion to the moving mechanism, and the adjusting mechanism includes an arithmetic mechanism which calculates the variation of the rotation moment around the shaft portion, based on the angle of inclination of the holding portion detected by means of the detecting mechanism, and a barycenter position adjusting mechanism which moves the counterweight along the axis of the fourth arm, thereby adjusting the position of the center of gravity of the counterweight, in accordance with the result of computation by the arithmetic mechanism.

27. (Previously Presented) A medical instrument holding apparatus comprising:

a basal portion having one end portion and an other end portion, the one end portion being fixed and having a shaft portion on the other end portion;

a rotating member having one end portion and an other end portion, the shaft portion being operatively coupled to the rotating member between the one and the other end portions of the rotating member;

a supporting mechanism which is operatively coupled to the one end portion of the rotating member and has a distal end portion supporting a medical instrument about a first axis and a holding portion being held by the operator;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the rotating member and the supporting mechanism, the ball joint being provided in a position shifted from a center of gravity of the holding portion

on the supporting mechanism toward the rotating member, the ball joint further supporting the supporting mechanism from below the supporting mechanism in the direction of gravity to be pivotable with respect to the rotating member and rotatable with respect to the holding portion about a second axis where the first and second axes are substantially parallel; and

a counterweight which is operatively coupled to the other end portion of the rotating member and having at least one of a weight and position such that the counterweight generates a rotation moment lower than and opposite to a rotation moment around the shaft portion caused by the sum of the respective weights of the medical instrument and the supporting mechanism.

28. (Previously Presented) A medical instrument holding apparatus according to claim 27, further comprising the medical instrument, wherein the holding portion is located so that a combined center of gravity of the combination of the holding portion and the medical instrument and the center of operation by the operator are situated in different positions; a center of inclination of the ball joint around which the holding portion is inclined by means of the ball joint being situated in a position different from the combined center of gravity of the holding portion and the medical instrument; and

the supporting mechanism further includes a support arm having a first end and a second end, the first end being supported on the moving mechanism and the second end supporting the ball joint, wherein the combined center of gravity is located on a longitudinal axis of the supporting mechanism between the first end and the distal end portion of the supporting mechanism.

29. (Previously Presented) A medical instrument holding apparatus according to claim 28, wherein the rotating member has a parallelogrammatic link mechanism, the link

mechanism including: a first arm having first and second arm ends, the first arm being connected to the support bar; a second arm having third and fourth arm ends, the third arm end being rotatably connected to the first arm end of the first arm, the second arm being coupled to the shaft portion between the third and fourth arm ends of the second arm to support the rotating member for rotating motion; a third arm kept parallel to the second arm and having fifth and sixth arm ends, the sixth arm end being connected to the second arm end of the first arm; and a fourth arm having seventh and eighth arm ends, the seventh arm end being connected to the fourth arm end of the second arm and the eighth arm end being connected to the third arm so as to be parallel to the first arm, the fourth arm having the counterweight located on the eighth arm end thereof.

30. (Previously Presented) A medical instrument holding apparatus comprising:

supporting means which has a distal end portion supporting a medical instrument about a first axis and a holding means being held by the operator;

moving means which supports the supporting means, the moving means having one side and an other side and allowing the supporting means to move at the one side;

a shaft portion operatively connected to the moving means for rotating the supporting means, thereby moving the medical instrument;

a basal portion which is coupled to the shaft portion and supports the moving means, allowing the moving means to rotate around the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving means and the supporting means, the ball joint being provided in a position shifted from a center of gravity of the holding means on the



supporting means toward the moving means and supports, the ball joint further supporting the supporting means from below the supporting means in the direction of gravity to be pivotable with respect to the moving means and rotatable with respect to the holding portion about a second axis where the first and second axes are substantially parallel; and

a counterweight which is located on the other side of the moving means such that the counterweight generates a rotation moment smaller than and opposite to a rotation moment around the shaft portion caused by the respective weights of the medical instrument and the supporting means.

31. (Previously Presented) A medical instrument holding apparatus according to claim 30, further comprising a medical instrument, wherein the holding means is located so that a combined center of gravity of the holding means and the medical instrument and the center of operation by the operator are situated in different positions on the holding means; and

the supporting means further includes a tilting mechanism which supports the holding means so as to be inclinable, a center of inclination of the tilting mechanism around which the holding means is inclined by means of the tilting mechanism being situated in a position different from the combined center of gravity of the combination of the holding means and the medical instrument; and a support arm having a first end and a second end, the first end being supported on the moving means and the second end supporting the tilting mechanism, wherein the combined center of gravity is located on a longitudinal axis of the supporting means between the first end and the distal end portion of the supporting means.

32. (Previously Presented) A medical instrument holding apparatus according to claim 1,

wherein the ball joint includes a braking mechanism which is configured to switch between a state of restriction to regulate a movement of the moving mechanism and the supporting mechanism and a state of permission to permit the movement; and

the holding portion includes a switch which is configured to switch the braking mechanism between the state of restriction and the state of permission.

33. (Previously Presented) A medical instrument holding apparatus according to claim 1, wherein the medical instrument includes an optical system which observes an object.

34. (Previously Presented) A medical instrument holding apparatus according to claim 33, wherein the optical system includes an imaging system.

35. (New) A medical instrument holding apparatus comprising:  
a supporting mechanism which has a distal end portion adapted to support a medical instrument about a first axis and a holding portion adapted for being held by the operator;

a moving mechanism which has at least first and second sides and which supports the supporting mechanism;

a shaft portion operatively connected to the first side along a longitudinal length of the first side such that the medical instrument and the supporting mechanism can be rotated about the shaft portion;

a basal portion which is coupled to the shaft portion, the basal portion supporting the moving mechanism and allowing the moving mechanism to rotate about the shaft portion;

a ball joint located between the moving mechanism and the supporting mechanism to operatively connect the moving mechanism to the supporting mechanism via the second side, the ball joint being provided in a position shifted from a center of gravity of the holding portion along a longitudinal axis of the second side of the moving mechanism, the ball joint further supporting the supporting mechanism from below the supporting mechanism in the direction of gravity to be pivotable with respect to the moving mechanism and rotatable with respect to the holding portion about a second axis where the first and second axes are substantially parallel; and

a counterweight which is located on the second side of the moving mechanism such that a first rotation moment is smaller than a second rotation moment generated from the weights of the medical instrument and the supporting mechanism, the counterweight acting about the shaft portion in the opposite direction to the second rotation moment.